FIG. 1

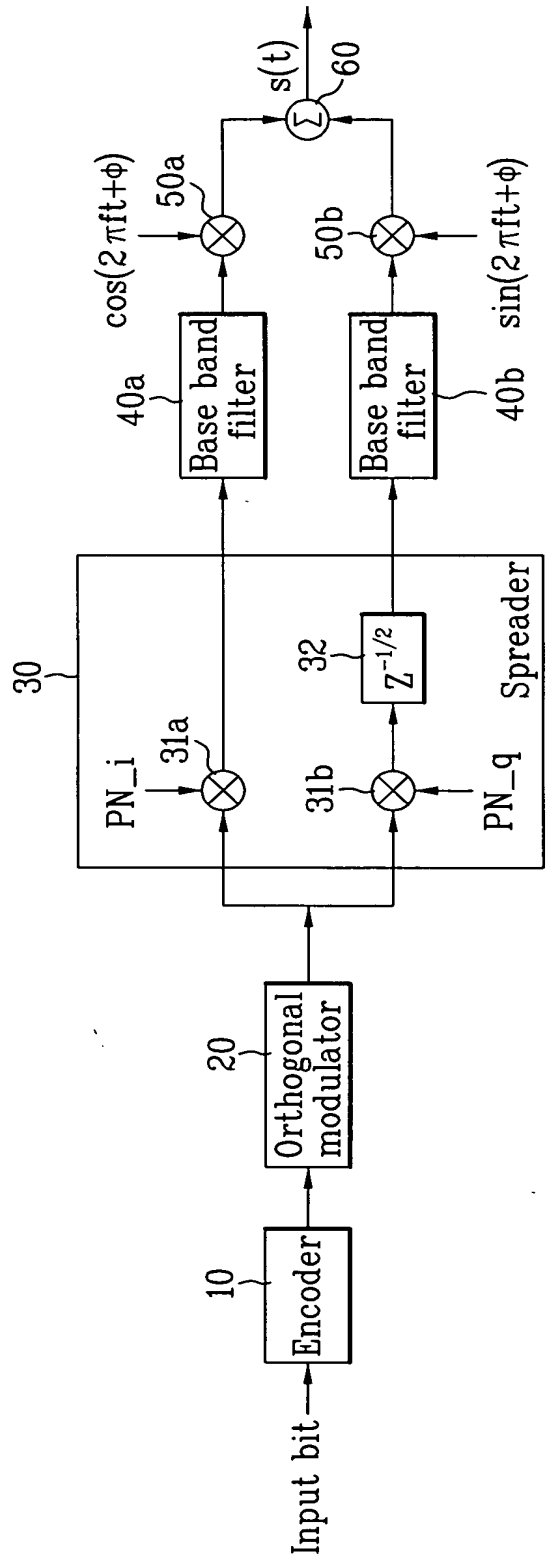

Input bit
10
Encoder
20
Orthogonal modulator
30
PN_i
31a
31b
32
$Z^{-1/2}$
PN_q
Spreader
40a
Base band filter
40b
Base band filter
cos(2πft+φ)
50a
50b
sin(2πft+φ)
s(t)
60

FIG. 2

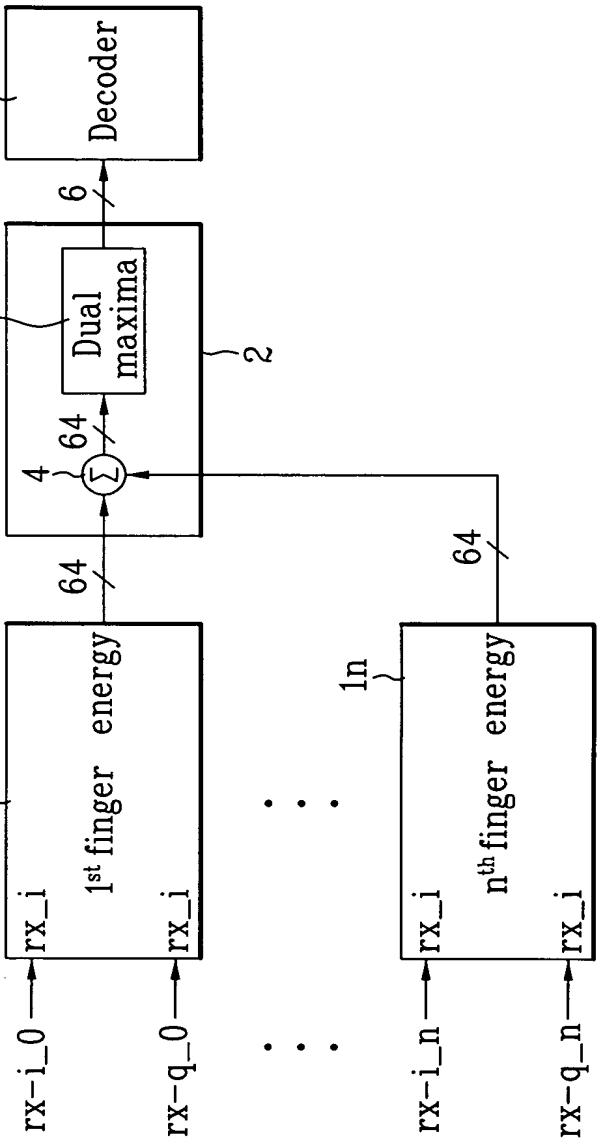

3
Decoder
6
5
Dual maxima
64
4
Σ
2
64
64
1a
1st finger energy
1n
nth finger energy
rx_i
rx_i
rx_i
rx_i
rx-i_0
rx-q_0
rx-i_n
rx-q_n

FIG. 3

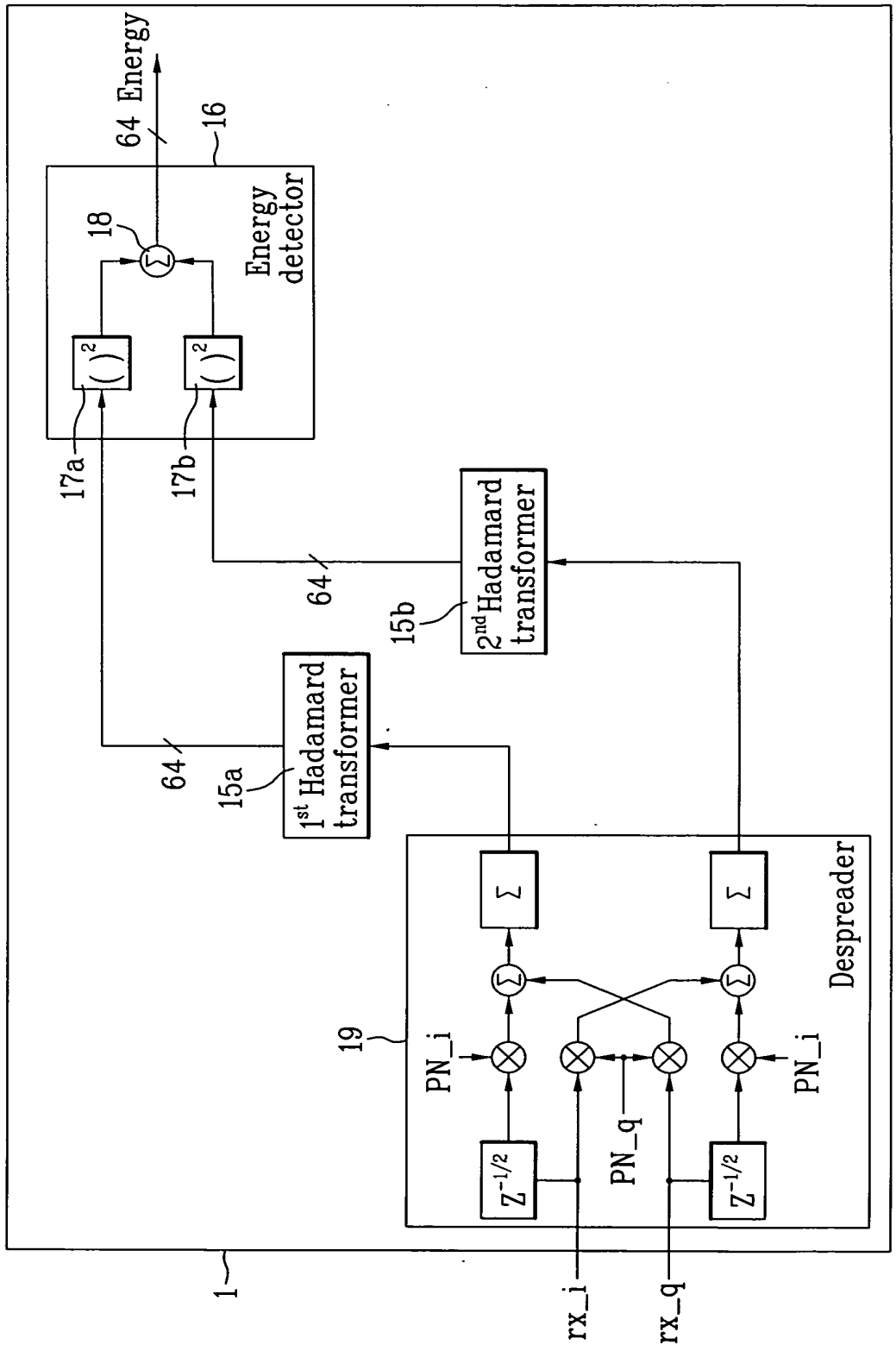

1
rx_i
rx_q
Despreader
Z^-1/2
PN_i
PN_q
PN_i
Σ
Σ
19
1st Hadamard transformer
15a
64
2nd Hadamard transformer
15b
64
17a
17b
( )^2
( )^2
Energy detector
18
16
64 Energy

FIG. 4

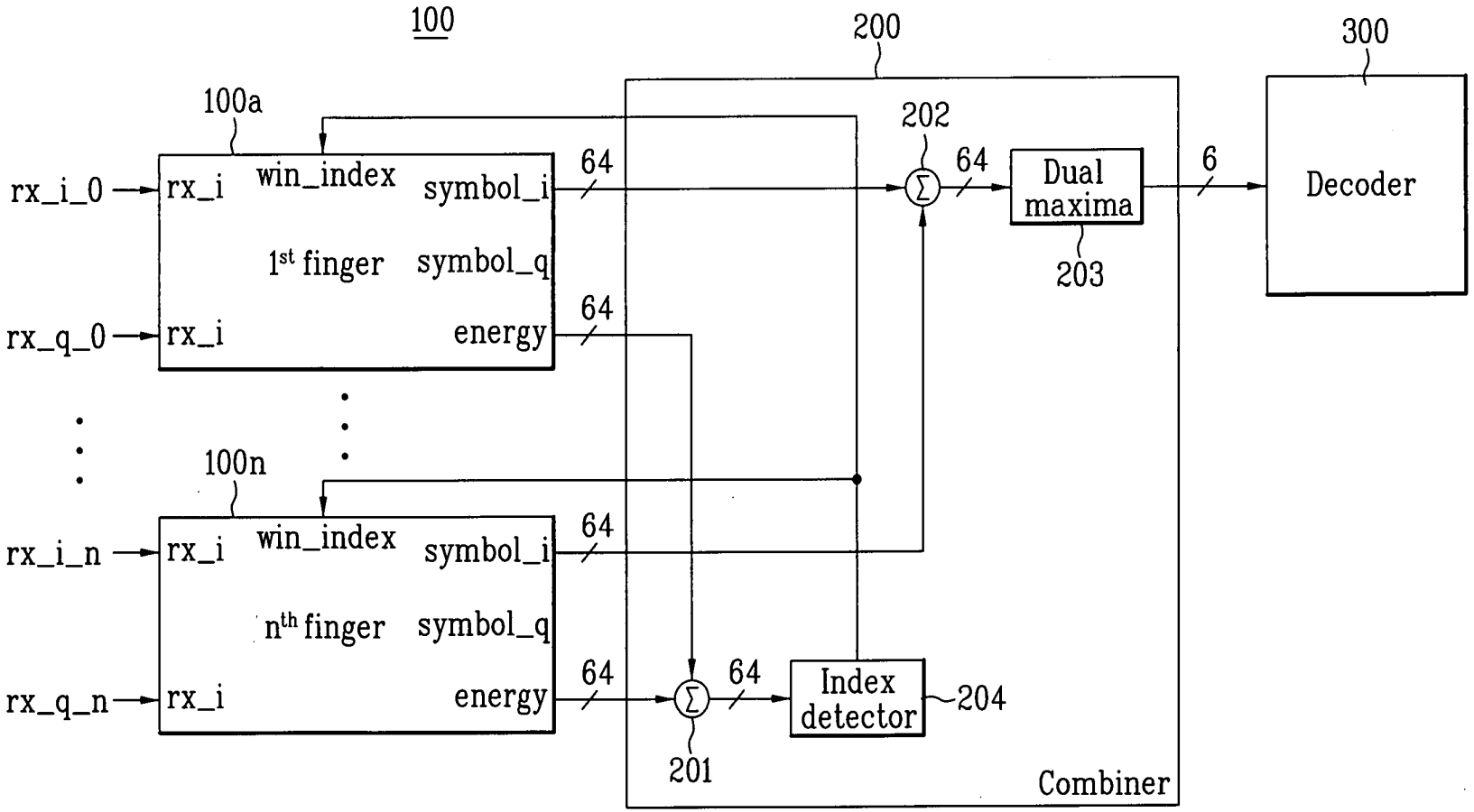
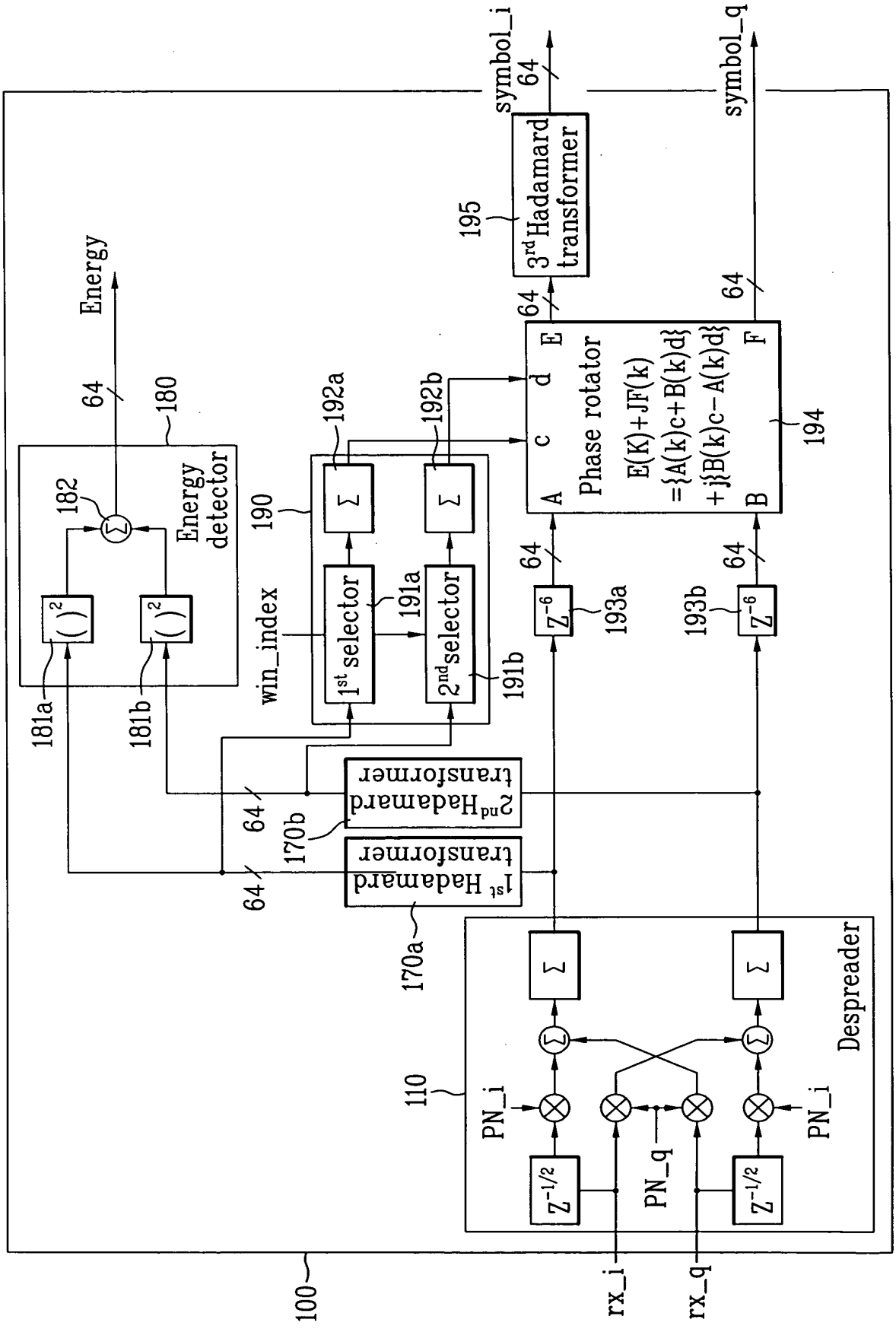

100
200
300
100a
202
64
64
Dual maxima
6
Decoder
rx_i_0
rx_i
win_index
symbol_i
1st finger
symbol_q
rx_q_0
rx_i
energy
64
203
100n
rx_i_n
rx_i
win_index
symbol_i
64
nth finger
symbol_q
rx_q_n
rx_i
energy
64
64
Index detector
204
201
Combiner

FIG. 5


100
rx_i
rx_q
Despreader
110
PN_i
PN_q
PN_i
$Z^{-1/2}$
$Z^{-1/2}$
Σ
Σ
170a
1st Hadamard transformer
64
170b
2nd Hadamard transformer
64
win_index
190
192a
192b
Σ
Σ
1st selector
2nd selector
191a
191b
64
64
Z^{-6}
Z^{-6}
193a
193b
64
64
A
B
c
d
E
F
Phase rotator
E(K)+JF(k)
={A(k)c+B(k)d}
+j{B(k)c−A(k)d}
194
64
64
195
3rd Hadamard transformer
symbol_i
symbol_q
181a
181b
$(\ )^2$
$(\ )^2$
182
Σ
64
180
Energy
Energy detector